

What is claimed is:

1. A method of providing network access across a DOCSIS 1.0 compliant cable network of a data-over-cable (DOC) network to at least two users competing for bandwidth, comprising the steps of:

(a) determining for each user a respective first bandwidth allowance for a first future time interval;

(b) generating a first set of cable modem configuration files, each of which limits bandwidth consumption by a cable modem (CM) of a respective user to that user's first bandwidth allowance;

(c) sending the configuration files to a Trivial File Transfer Protocol (TFTP) Server of the DOC Network;

(d) sending a command either to each user's CM or to a cable modem termination system (CMTS) to which each user's CM is connected to cause each CM to acquire its new respective configuration file of the first set for the first time interval;

(e) determining for each user a respective second bandwidth allowance for a second future time interval, a second bandwidth allowance of at least one of the users differing from that user's first bandwidth allowance; and

(f) for each user having a second bandwidth allowance different from that user's first bandwidth allowance,

(i) generating a second cable modem configuration file which limits bandwidth consumption of that user's CM to a value representative of that user's second bandwidth allowance;

(ii) sending the second configuration file for that user to the TFTP Server of the DOC Network; and

(iii) sending a command either to that user's CM or to the CMTS to which that user's CM is connected to cause the CM to acquire the second configuration file for that user for the second time interval.

2. The method of claim 1, further comprising the steps of monitoring bandwidth of each user for a time interval and, based on said monitored bandwidth, determining each user's second bandwidth allowance.

3. The method of claim 2, wherein said step of determining each user's second bandwidth allowance includes prioritizing each user and allocating bandwidth to each user according to such priority.

4. The method of claim 3, wherein said step of prioritizing includes comparing said monitored bandwidth with respective values specified by service level agreements (SLAs) of the users.

5. The method of claim 3, wherein said step of prioritizing includes comparing said monitored bandwidth of each user with an established minimum quality of service value.

6. The method of claim 2, wherein said step of determining each user's second bandwidth allowance includes forecasting each user's bandwidth for the second future time interval.

7. The method of claim 6, wherein said step of determining each user's bandwidth allowance includes prioritizing the users for allocation of bandwidth based on said forecasting.

8. The method of claim 2, wherein said step of monitoring comprises monitoring the bandwidth that is consumed by each CM in the upstream direction during time intervals of one minute to fifteen minutes.

9. The method of claim 2, wherein said step of monitoring comprises monitoring the bandwidth that is requested by each CM in the upstream direction during time intervals of one minute to fifteen minutes.
10. The method of claim 2, wherein said step of monitoring comprises monitoring the bandwidth that is consumed by each CM in the downstream direction during time intervals of fifteen minutes to sixty minutes.
11. The method of claim 2, wherein said step of monitoring includes collecting data representative of the number of logical data units transmitted from and to each user during a time interval.
12. The method of claim 2, wherein said step of monitoring includes collecting data representative of the number of bytes and data packets transmitted from and to each user during a time interval.
13. The method of claim 2, wherein said step of monitoring includes collecting data representative of the number of logical data units of the user that are dropped during a time interval.
14. The method of claim 2, wherein said step of monitoring includes collecting data representative of the number of bytes and data packets of the user that are dropped during a time interval.
15. The method of claim 2, wherein said step of monitoring includes collecting data representative of the number of logical data units of the user that are requested to be transmitted in the upstream direction during a time interval.
16. The method of claim 1, wherein the first time interval and the second time interval are consecutive time intervals.
17. The method of claim 1, wherein each of the first time interval and the second time interval has a period of one to sixty minutes.

18. The method of claim 1, wherein for each user, the first bandwidth allowance of that user differs from the second bandwidth allowance of that user.

19. The method of claim 1, wherein the first bandwidth allowance for each user differs from the first bandwidth allowance of all other users.

5 20. The method of claim 1, wherein the second bandwidth allowance for each user differs from the second bandwidth allowance of all other users.

21. The method of claim 1, wherein the first bandwidth allowance of each user is determined by allocating bandwidth to each user on a per user basis for the first time interval in accordance with a first selected allocation policy.

10 22. The method of claim 21, wherein the second bandwidth allowance of each user is determined by allocating bandwidth to each user on a per user basis for the second time interval in accordance with a second selected allocation policy.

23. The method of claim 22, wherein the first and second allocation policies differ.

15 24. The method of claim 22, wherein the first and second allocation policies are the same.

25. A method of continuously providing network access across a cable network of a data-over-cable (DOC) network to at least two users competing for bandwidth, comprising the steps of:

20 (a) determining for each user during present time intervals bandwidth allowances of such user for respective future time intervals, each bandwidth allowance of such user for a future time interval representing a maximum level of bandwidth consumption for such user during the future time interval, but not necessarily representing the amount of bandwidth that will be consumed by such user during such future time

interval, the bandwidth allowances of each user varying as between time intervals; and

- (b) for each user, limiting during each respective future time interval bandwidth consumption of that user's cable modem (CM) to that user's respective bandwidth allowance for such time interval by implementing a new cable modem configuration file in the CM.

26. The method of claim 25, wherein the present and future time intervals have a uniform period of one minute to sixty minutes.

27. The method of claim 25, wherein each user's bandwidth allowance for each future time interval is determined by allocating bandwidth to the users on a per user basis for such future time interval in accordance with a selected allocation.